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Mr. Fraley reported progress in negotiating a more satisfactory understanding with the city authorities, respecting the tenancy of the lower stories of the Hall building.

On motion, the Secretaries were authorized to place the new Geological Magazine, London, on the list of correspondents to receive the proceedings, if they thought proper to do so.

On motion of Mr. Price, the Committee on the Hall were authorized to obtain a new table, to re-cover the president's desk, and see to a better condition of the carpeting and furnishing of the room in which the members meet.

And the Society was adjourned.

Stated Meeting, March 5, 1875.

Present, 10 members.

MR. ELI K. PRICE, in the chair.

A letter accepting membership was received from Mr. J. P. Kirtland dated Cleveland, Ohio, Feb. 22, 1875.

A letter of acknowledgment (93) was received from the U. S. Naval Observatory, dated March, 1875.

A letter of acknowledgment (93) was received from the Rantoul Literary Society, Rantoul, Ill., Feb. 27.

A letter from Mr. S. P. Langley, Directory of the Allegheny Observatory, requesting the donation of Transactions of the A. P. S. was referred to the Publication Committee.

Donations for the Library were received from the Royal Academy at Brussels; Editors of the *Révue Politique*; Royal Astronomical Society; and *London Nature*; *Essex Institute*; Editors of *Penn Monthly*; *Pharmaceutical Association*; *Medical News and Library*; and Judge Brewster, of Philadelphia; Engineer Department and Secretary of War, Washington; Wisconsin Historical Society; Wisconsin Academy of Sciences and Arts; and Editors of the *Western*.

The death of Sir Charles Lyell was announced by the Secretary, at London, Feb. 24, 1875, aged 78 years

The death of Dr. Geo. W. Norris, at Philadelphia, March 4, 1875, aged 67 years, was announced by Mr. J. S. Price.

Mr. Cope read a paper by the title, "A Synopsis of the Vertebrata of the Miocene of Cumberland County, New Jersey." (See page 361.)

Dr. Cresson exhibited a map or diagram arranged on a vertical scale to represent the five coal beds mined at Ellengowan, near Mahanoy City, representing the thickness and subdivisions of each bed; and on a horizontal scale to exhibit the proportions of the various chemical elements obtained by analysis. Of the mammoth bed, the uppermost group of four benches is, at Ellengowan, separated from the middle group of three benches by 150 yards of rock, and the middle from the lower group of four benches by an equal distance, all three groups lying together, without the intervention of rock measures, in the neighboring collieries on each side; the total thickness of coal remaining always about the same.

Dr. Cresson exhibited and explained an American modification of Bunsen's apparatus for determining the specific gravity of any gas, and the obstacles to accuracy of the investigation when the given gas was either much heavier or much lighter than the common air into which it escaped.

Prof. Chase, being referred to, said that he had been requested by Dr. Cresson to experiment with the instrument in order to discuss its eccentricities, and had used the city gas, obtaining various curves of velocity of exit, when the uppermost and lowermost, or the two, or three, or other numbers of inches at the top or bottom of the tube were paired against each other; but without entirely satisfactory results.

He considered it probable that the causes of irregularity fell under three heads, viz.: 1st, the difference of density of the medium into which the fine jet of gas issued (through a microscopic hole in platinum foil); 2d, the vertical spiral forms into which the currents must be thrown; and 3d, friction, varying with condensation inside the instrument,

whenever the general temperature of the laboratory falls. To this latter cause he ascribed differences of results obtained in the morning and evening, amounting to twenty per cent. He thought that under favorable circumstances and with requisite care, an approximation to accuracy can be made within two per cent., and much closer than with the Bunsen instrument.

Professor Frazer communicated the fact of the discovery of titanite iron, in the form of a perfect crystal and of unusual size, half an inch on a side, associated with chlorite, in chromic iron, at Frank Wood's Mine, in Lancaster County, Pa. The specimen is in the possession of Mr. Tyson, near King of Prussia, Chester County, Pa. A small portion of the crystal was submitted to the blowpipe by Prof. Brush. (The specimen is mentioned in Dr. F. A. Genth's Report on the Mineralogy of Pennsylvania, Reports of Progress of the Second Geological Survey, 1874.)

Prof. Chase read a letter from Gov. Rawson, of Barbadoes, in which he writes that he expects to obtain the appointment, by Government, of a salaried officer, intrusted with the duty of continuing the meteorological observations at Barbadoes, the importance of which is made the greater by the fact that the island is near the hypothetical cradle of the Atlantic cyclones and tornadoes of the Gulf of Mexico.

Prof. Frazer described some microscopic sections of trap dykes on the Mesozoic red sandstone of Pennsylvania and Connecticut. He had taken specimens from the vicinity of Gettysburg, both as slides and fragments, to New Haven, and compared them with similar slides and fragments of the Connecticut traps in the possession of Mr. E. S. Dana. There were fine grained greenish dolerites exactly alike in both localities. Coarse-grained gray rock, which in fragments seemed identical, under the microscope showed differences between the Connecticut and Pennsylvania varieties; that of the former being merely a coarse-grained dolerite, while that of the latter was a true syenite. He said:—

During a recent trip to New Haven, I had the pleasure of examining the

very large collection of microscopic slides of the traps of the Mesozoic sandstone in the vicinity of that town.

Mr. Dana exhibited to me fragments of the traps, which when compared with the fragments which I had brought with me seemed to be identical lithologically so far as the eye, aided by a magnifying glass, could determine. There were two varieties of this trap which had been considered in my work essentially distinct, viz.: the doleritic and the syenitic. Both these varieties are represented within a small area in the immediate environs of Gettysburg, and even bear the appearance of running together (to judge from a rough guess from the topography). Now the finer-grained dolerite is of green color, and the specimens from New England, and those I took with me, showed under the microscope, and with the polarizer alone, the following mineral constituents. Pyroxene (Augit), plagioclastic feldspar, magnitite (in fine grains and irregular masses), and chrysolite. Mr. Hawes, of the Mineralogical laboratory, assures me that he has frequently found quartz in these dolerites.

The coarse-grained rock (both the specimen from Gettysburg and that from Connecticut,) is gray and granular, consisting of black and white crystals so mingled as to produce the familiar granite color to the eye. In fact the rock from Gettysburg is called "Gettysburg Granite." It was absolutely impossible to distinguish the fragments of this rock from the localities apart, yet under the microscope and the single Nicol the effect was very different. The Connecticut variety showed the same constituents as the other traps—was in fact a coarse dolerite; whereas that from Gettysburg showed the characteristic dichroism of hornblende, and also under a high magnifying power crystals of biotite.

In the specimen which I took with me to New Haven, there were no cleavage planes to absolutely settle the character of the supposed hornblende, but in others in my possession this was very marked and settles definitely the question of the occurrence of syenite in the Mesozoic sandstone.

Mr. Dana warns me of a possible error in this conclusion, viz.: that the mass from which I took my slides was only a boulder—not in place. This would be a very serious objection were it not for the absolute identity of the rock in the immense masses of slab formed rock, from the quarry which supplies the tombstones and the walls of our national cemetery, as well as cubic roods of rock in Culp's Hill, Great Round Top, Granite Spur, and Devil's Den—localities which must ever remain familiar to us as connected with the history of one of the decisive battles of the world.

Besides this, as the Gettysburg locality lies miles south of the extreme southern limit of the drift, there would seem to be no adequate theory to account for such transportation.

In order to set at rest this doubt and decide this question finally, further sections will be made from rock without doubt *in situ* and the results communicated to the Society.

Pending nominations, Nos. 766 to 776, and new nominations, Nos. 777, 778 were read.

On motion of Prof. Frazer, it was

Resolved, That the Hall Committee be requested to consider the propriety of placing in the Society's rooms one of the instruments of the American District Telegraph Company, and the Treasurer be authorized to pay \$18.00 as the annual rental of the same.

And the Society was adjourned.

Stated Meeting, March 19, 1875.

Present, 13 members.

Vice-President, MR. FRALEY, in the chair.

Photographs of Prof. Sadtler and Prof. Thomson, of the University of Pennsylvania, were presented for insertion in the album.

Letters of acknowledgment were received from the Literary and Philosophical Society of Liverpool, dated Jan. 25 (XIV., XV., i., 90, 91, 92); and Smithsonian Institution (90, 92).

A letter was received from the New Jersey Historical Society, Newark, March 12, requesting that deficiencies in their set of Proceedings and Transactions A. P. S. be supplied (Proc. I., II., III, 77. Transactions, all but the First Series III., i. Cat. I).

A letter was read from Mr. Wm. Holden, Librarian of the Ohio State Library, desiring to exchange copies of the Geological State Survey for Dr. Wood's and Mr. Cope's memoirs on the Arachnidæ and Myriopoda, in the Transactions and Proceedings of the American Philosophical Society.

Letters of envoy were received from the Austrian Academy, Sep. 30, 1874; the St. Petersburg Physical Central Observatory, Jan., 1875; the Greenwich Observatory, Feb. 19, 1875; the Literary and Philosophic Society, of Liverpool, Jan. 28,